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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/829,915	04/11/2001	Masami Tsukamoto	684.3179	8192

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EXAMINER

BROWN, KHALED

ART UNIT PAPER NUMBER

2877

DATE MAILED: 04/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/829,915

Applicant(s)

TSUKAMOTO, MASAMI

Examiner

Khaled Brown

Art Unit

2877

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 September 2003 and 23 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 45-52 and 77-121 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 45-52 is/are allowed.
- 6) ☒ Claim(s) 77-121 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 9-4 & 12-23-03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 105,106,108-114,117-120 are rejected under 35 U.S.C. 102(b) as being anticipated by Fujie et al (US 5696623).

Re clms105,119: Fujie et al discloses an exposure apparatus comprising: a projection optical system (Fujie et al 15), having a plurality of optical elements, for projecting a pattern (Fujie et al 13) onto a predetermined plane (Fujie et al 16); a barrel for accommodating said plurality of optical elements (Fujie et al 14), gas supplying means disposed between the predetermined plane and a final optical element (Fujie et al, P in), which is one of said plurality of optical elements that is closest to the predetermined plane, said final optical element being placed at a position of an opening formed in a portion of said barrel, which portion is closest to the predetermined plane (Fujie et al, Fig 6b), said gas supplying means supplying a gas from one side of said projection optical system (Fujie et al, Fig 3b); and gas exhaust means disposed at the other side (Fujie et al, P out), opposite to the one side, for exhausting the gas, wherein said gas supplying means has a plurality of gas supply ports (Fujie et al, Ha, Hb) and said gas exhaust means has a plurality of gas exhausting ports (Fujie et al, Hd, Hc).

Art Unit: 2877

Re clm106: a plurality of gas supplying means (Fujie et al, Ha, Hb)

Re clm 108: cover member (Fujie et al 25)

Re clm 109: gas supply means (Fujie et al 207)

Re clms 110,111: inactive gas, nitrogen (Fujie et al Col 4 lines 41-43)

Re clm 112,113,114: impurity removing means (Fujie et al 202)

Re clm 117: temperature adjusting means unit (Fujie et al 108)

Re clm 118: UV light (Fujie et al 211)

Re clm 120: optical element (Fujie et al 15) opposed to a wafer (Fujie et al 16)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 77-104,107,115,116 and 121 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujie et al (US 5696623) in view of Tokuda et al (US 5995263).

Re clms 77,107: Fujie et al discloses an optical apparatus comprising: an optical element (Fujie et al 15) and a means for producing a flow of gas (Fujie et al P in, H9), locally flowing to a surface of the optical element (Fujie et al Col 15 line 12). However, Fujie et al does not disclose that the gas supply means produces a laminar gas flow.

Tokuda et al discloses that a gas flow (Tokuda et al Fig 12 gas produced by element 130) over the surface of a lens (Tokuda et al 15A) should be a laminar gas flow (Tokuda

et al, shown in Fig 12) to avoid air fluctuation (Tokuda et al Col 2 line 37). Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the gas supply means of Fujie et al provide a laminar gas flow to avoid air fluctuation as taught by Tokuda et al.

Re clms 78,96: UV light (Fujie et al 211)

Re clms 79,97: a container (Fujie et al 201)

Re clm 80: gas supplying means (Fujie et al, P in) and gas discharging means (Fujie et al, P out)

Re clms 81: a plurality of gas supplying means (Fujie et al, Ha, Hb)

Re clm 82: a plurality of gas discharging means (Fujie et al, Hd, Hc)

Re clm 83: supply and discharge means disposed at either side of optical element (Fujie et al, Fig 3B)

Re clm 84: cover member (Fujie et al 25)

Re clm 85,86: means for removing impurity (Fujie et al 202)

Re clm 87: inactive gas (Fujie et al Col 4 lines 41-43)

Re clm 88: atmospheric gas (Fujie et al Col 4 lines 43-50)

Re clms 89,90,98,115,116: adjusting means (Tokuda et al, Col 7 lines 14-42)

Re clm 91: temperature adjusting means unit (Fujie et al 108)

Re clm 92,93,100,103:exposure apparatus (Fujie et al Col 1 lines 9-10, Fig 6b)

Re clms 94,104,121 : the combination system of Fujie et al and Tokuda et al discloses an exposing step (Fujie et al Col 1 lines 7-10). However the combination system of Fujie et al and Tokuda et al does not explicitly disclose a developing step. It would have been

Art Unit: 2877

obvious to one of ordinary skill in the art at the time the invention was made to develop the exposed wafer of the combination system of Fujie et al and Tokuda et al because it was well know in the art at the time the invention was made to develop a wafer after exposing the wafer since this is the next step in the photolithography process.

Re clms 95,101: Fujie et al discloses a method comprising: producing a local flow of gas, flowing to a surface of an optical element of an optical apparatus (Fujie et al Col 2 lines 26 -32), thereby to prevent contamination of the optical element (Fujie et al Col 2 lines 33 -41). However, Fujie et al does not disclose that the gas supply means produces a laminar gas flow. Tokuda et al discloses that a gas flow (Tokuda et al Fig 12 gas produced by element 130) over the surface of a lens (Tokuda et al 15A) should be a laminar gas flow (Tokuda et al, shown in Fig 12) to avoid air fluctuation (Tokuda et al Col 2 line 37). Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the gas supply means of Fujie et al provide a laminar gas flow to avoid air fluctuation as taught by Tokuda et al.

Re clm 99: impurity removing means (Fujie et al 202)

Re clm 102: exposing a wafer (Fujie et al Col 2 lines 26-41)

Allowable Subject Matter

Claims 45-52 are allowed.

The following is an examiner's statement of reasons for allowance: the prior art of record fails to disclose or suggest the claimed structure of a "surface outlet port which is

Art Unit: 2877

inclined with respect to the image plane so that the gas outlet port faces toward the predetermined surface of the optical element rather than to the image plane" in conjunction with the rest of the claimed subject matter.

Note: A signed copy of two IDS's filed 9-4-03 and 12-23-03 are attached to this office action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khaled Brown whose telephone number is 571-272-2411. The examiner can normally be reached on M-F 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on 571-272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



KB
March 22, 2004



Frank G. Font
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Technology Center 2800